Claims

1. A method of performing model-based optical proximity correction comprising:
providing a region of interest (ROI) having an interaction distance;
locating at least one finite geometrical shape within said ROI;
generating at least one cut line across at least one lateral edge of said at least one finite geometrical shape; and
extending said ROI beyond its interaction distance based on a location of said at least one cut line across said at least one lateral edge of said at least one finite geometrical shape to correct for optical proximity.

2. The method of claim 1 wherein said finite geometrical shape comprises a polygon.

3. The method of claim 2 wherein said polygon is selected from the group consisting of regular, irregular, convex, concave, regular convex, regular concave, irregular convex and irregular concave.

4. The method of claim 1 wherein said at least one cut line comprises a plurality of sample points representative of a set of vertices within said ROI.

5. The method of claim 4 wherein said at least one cut line residing across said location of said lateral edge comprises a first number of said plurality of sample points residing on a first side of an intersection between said cut line and said lateral edge and a second number of said plurality of sample points residing on a second side of said intersection.

6. The method of claim 5 wherein said first and second numbers of said plurality of sample points of said cut line are identical.

7. The method of claim 5 wherein said first and second numbers of said plurality of sample points of said cut line differ.

8. The method of claim 1 wherein the step of extending said ROI beyond its interaction distance based on said location of said at least one cut line comprises determining whether said at least one cut line is selected from the group consisting of a horizontal cut line, a vertical cut line and a 45-degree cut line.

9. The method of claim 8 wherein said cut line comprises said horizontal cut line, the method including the step of extending said ROI horizontally in a one-dimensional direction on opposing horizontal sides of said ROI.

10. The method of claim 8 wherein said cut line comprises said vertical cut line, the method including the step of extending said ROI vertically in a one-dimensional direction on opposing vertical sides of said ROI.

11. The method of claim 8 wherein said cut line comprises said 45-degree cut line, the method including the step of extending said ROI in a two-dimensional direction on all horizontal and vertical sides of said ROI.

12. The method of claim 1 further including repeating said steps for a plurality of cut lines residing across said at least one lateral edge of said at least one finite geometrical shape, and extending said ROI beyond its interaction distance based on a plurality of locations of said plurality of cut lines.

13. The method of claim 1 further including the step of simultaneously retrieving pre-calculated convolution contributions of multiple sample points across said at least one cut line in a single convolution contribution search step for summation of convolution within said ROI to correct for optical proximity.

14. A method of performing model-based optical proximity correction comprising:

providing a first region of interest (ROI) having an interaction distance;

locating at least one polygon within said first ROI;

locating at least one cut line across at least one lateral edge of said at least one polygon, said at least one cut line comprising a plurality of sample points representative of a set of vertices within said first ROI;

determining an angular position of said at least one cut line across said at least one lateral edge of said at least one polygon;

determining a first portion and a second portion of said at least one cut line residing on opposing sides of an intersection between said at least one cut line and said at least one lateral edge; and

providing a second ROI by extending said first ROI beyond its interaction distance based on said angular position of said at least one cut line and said first and second portions of said at least one cut line residing on said opposing sides of said intersection, said second ROI for use in correcting for optical proximity.

15. The method of claim 14 further including locating within said first ROI a plurality of cut lines across said at least one lateral edge of said at least one polygon and providing said second ROI by extending said first ROI a plurality of times beyond its interaction distance based on said plurality of cut lines to generate a plurality of new regions of interest.

16. The method of claim 14 wherein said first portion of said at least one cut line residing on said first side of said intersection corresponds to a first number of sample points from said plurality of sample points, while said second portion of said at least one cut line residing on said second side of said intersection corresponds to a second number of sample points from said plurality of sample points.

17. The method of claim 16 wherein said first and second numbers of said plurality of sample points of said cut line are identical, such that said second ROI is provided by

extending said first ROI by an equal amount on at least two opposing sides of said first ROI.

18. The method of claim 16 wherein said first and second numbers of said plurality of sample points of said cut line differ, such that said second ROI is provided by extending said first ROI by an unequal amount on at least two opposing sides of said first ROI.

19. The method of claim 14 wherein said angular position of said at least one cut line across said at least one lateral edge of said at least one polygon is selected from the group consisting of a horizontal cut line, a vertical cut line and a 45-degree cut line.

20. The method of claim 19 wherein said cut line comprises said horizontal cut line, the method including the step of providing said second ROI by extending said first ROI horizontally in a one-dimensional direction on opposing horizontal sides of said first ROI.

21. The method of claim 20 wherein the first ROI is extended in an equal or unequal amount on said opposing horizontal sides of said first ROI.

22. The method of claim 19 wherein said cut line comprises said vertical cut line, the method including the step of providing said second ROI by extending said first ROI vertically in a one-dimensional direction on opposing vertical sides of said first ROI.

23. The method of claim 22 wherein the first ROI is extended in an equal or unequal amount on said opposing vertical sides of said first ROI.

24. The method of claim 19 wherein said cut line comprises said 45-degree cut line, the method including the step of providing said second ROI by extending said first ROI in a two-dimensional direction on all horizontal and vertical sides of said first ROI.

25. The method of claim 24 wherein said first ROI is extended by a first function of (d1)(cos(π/4)) on a first set of opposing edges of said first ROI and by a second function of (d2)(cos(π/4)) on a second set of opposing edges of said first ROI, such that said first ROI is extended on all side of said first ROI.

26. The method of claim 25 wherein said first ROI is extended in an equal or unequal amount at said first set of opposing edges as compared to said second set of opposing edges.

27. The method of claim 14 wherein said step of extending said first ROI beyond its interaction distance further includes capturing additional polygons originally residing outside boundaries of said first ROI or additional portions of any polygons originally residing within or on said boundaries of said first ROI.

28. The method of claim 14 further including the step of simultaneously retrieving pre-calculated convolution contributions of multiple sample points across said at least one cut line in a single convolution contribution search step for summation of convolution of said set of vertices within said first ROI to correct for optical proximity.

29. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform method steps for performing model-based optical proximity correction, said method steps comprising:

providing a region of interest (ROI) having an interaction distance;

locating at least one finite geometrical shape within said ROI;

generating at least one cut line across at least one lateral edge of said at least one finite geometrical shape; and

extending said ROI beyond its interaction distance based on a location of said at least one cut line across said at least one lateral edge of said at least one finite geometrical shape to correct for optical proximity.

30. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform method steps for performing model-based optical proximity correction, said method steps comprising:

providing a first region of interest (ROI) having an interaction distance;

locating at least one polygon within said first ROI;

locating at least one cut line across at least one lateral edge of said at least one polygon, said at least one cut line comprising a plurality of sample points representative of a set of vertices within said first ROI;

determining an angular position of said at least one cut line across said at least one lateral edge of said at least one polygon;

determining a first portion and a second portion of said at least one cut line residing on opposing sides of an intersection between said at least one cut line and said at least one lateral edge; and

providing a second ROI by extending said first ROI beyond its interaction distance based on said angular position of said at least one cut line and said first and second portions of said at least one cut line residing on said opposing sides of said intersection, said second ROI for use in correcting for optical proximity.